

January 27, 2014

• Engineering

Remediation

• Consulting

Mr. Richard Staron
Pennsylvania Department of Environmental Protection
Environmental Cleanup Program (ECP)
Southeast Regional Office
2 East Main Street
Norristown, PA 19401

Re: Work Plan for Soil Gas Investigation

ECP – Special Projects – Act 2 (eFACTS # 47534)

Superior Tube Company, Inc.

3900 Germantown Pike

Lower Providence Township, Montgomery County

Dear Mr. Staron:

Pursuant to the Act 2 Cleanup Plan, as modified by the December 13, 2011 letter from Environmental Alliance, Inc. (Alliance) to the United States Environmental Protection Agency (USEPA), for the above referenced Site, Alliance, on behalf of Superior Tube Company, Inc. (STCI), is providing this Work Plan proposing a soil gas investigation in the area of Point of Compliance (POC) monitoring well MW-1 on Lot 8 of the site.

As reported in the 60-Day Status Report dated December 20, 2013, POC well MW-1, sampled on November 15, 2013, reported a trichloroethylene (TCE) concentration of 2,000 µg/L, which exceeds the Site Specific Standard (SSS) of 1,800 µg/L. Analytical results from samples collected on December 12, 2013 during the re-sampling event indicated a TCE concentration of 1,600 µg/L at MW-1, below the SSS. It should be noted that STCI initiated monthly sampling of POC well MW-1 after an increasing trend in TCE concentration was observed following the September 2013 quarterly attainment monitoring event. The November result has been the only exceedance of the SSS at MW-1.

The average concentration of the November and December results does not exceed the SSS by more than 25%. MW-1 is approximately 200-ft from an occupied dwelling. As presented in the December 13, 2011 letter, additional investigations will be completed when the following criteria are met: (1) the exceedance is confirmed by re-sampling and the POC well is within 200-ft from

an occupied dwelling; or (2) the average of the two groundwater results exceeds the SSS by more than 25% at any POC well. Although based on these data a work plan is not required at this time, STCI wishes to evaluate the potential vapor intrusion pathway in this area to determine if further action may be required should continued exceedances of the SSS for TCE be detected in this POC well.

Figure 1 presents a Site Base Map depicting the location of the site monitoring and POC wells. A TCE concentration trend graph for POC well MW-1 is presented in Figure 2. The laboratory analytical reports for MW-1 (March through December 2013) are provided in Attachment 1.

Given the location of POC well MW-1, the recent TCE concentrations, and the possibility of future exceedance(s) of the SSS at MW-1, Alliance proposes to conduct a soil gas investigation in the area of MW-1 to qualitatively assess the potential risk that the dissolved TCE concentrations in the bedrock aquifer poses to the vapor intrusion pathway at this, and neighboring, locations. It is proposed that this investigation be completed using soil gas monitoring wells (SGMWs). The SGMWs will measure VOCs present in the subsurface soil gas in the unconsolidated soils above the competent bedrock in the area of the dissolved phase TCE plume. Four SGMWs are proposed at locations depicted on Figure 3, attached.

The SGMWs will be installed using a direct-push sampling technology and the boring will be advanced until shallow (perched) groundwater, or refusal is encountered. The SGMW will be constructed with a one or two-foot length of one-inch diameter 10 slot schedule 40 PVC screen and appropriate length of one-inch PVC riser to extend to ground surface. The target screen depth of the SGMW will be 8-9 feet (ft) below ground surface (bgs), with a minimum depth of 3-4 ft bgs should refusal or groundwater be encountered at shallower depths. The annular space between each well screen and the borehole will be filled with a sand pack from the bottom of the borehole to approximately 0.5 feet above the screened interval. A bentonite grout seal will be placed from the annular space above the sand pack to the surface. No solvent or glue will be used in the construction of the well. Sampling will not take place until at least 24-hours after construction. The SGMWs will be sampled in accordance with sampling procedures summarized in Attachment 2.

The proposed schedule is to conduct the installation of the SGMWs and a winter sampling event by the end of February 2014. A second sampling event will be conducted in the spring. A report will be submitted to PADEP and EPA summarizing the results of the soil gas investigation. The data collected may be used to model potential vapor intrusion into buildings and/or eliminate vapor intrusion as an exposure pathway in this area of the Site.



If you have any questions regarding this submittal or require additional information, please contact me at (302) 234-4400.

Sincerely yours,

ENVIRONMENTAL ALLIANCE, INC.

Joseph Rossi Project Manager

cc: Khai Dao, USEPA

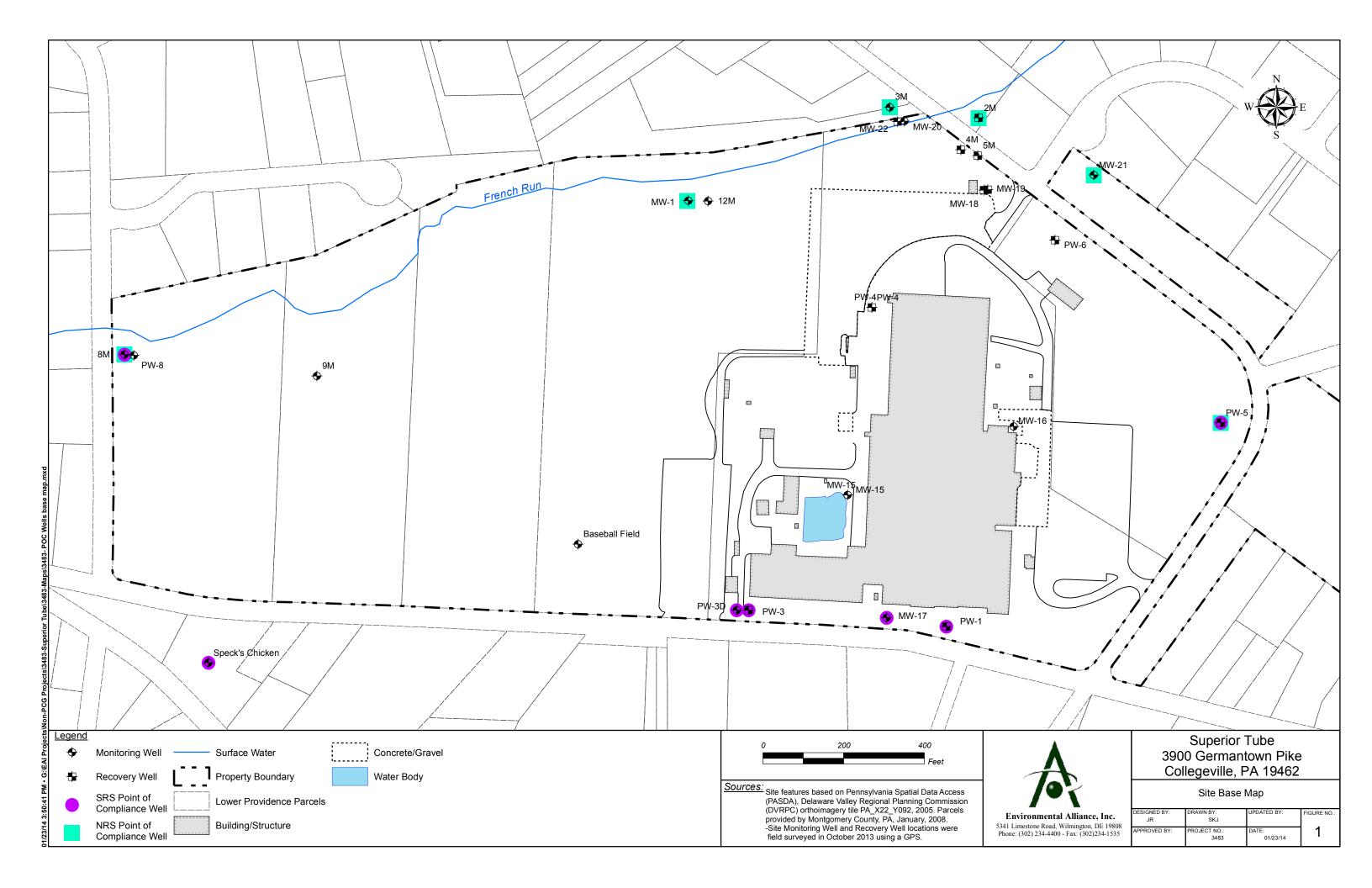
Rick Warden, STC John Peronti, STCI

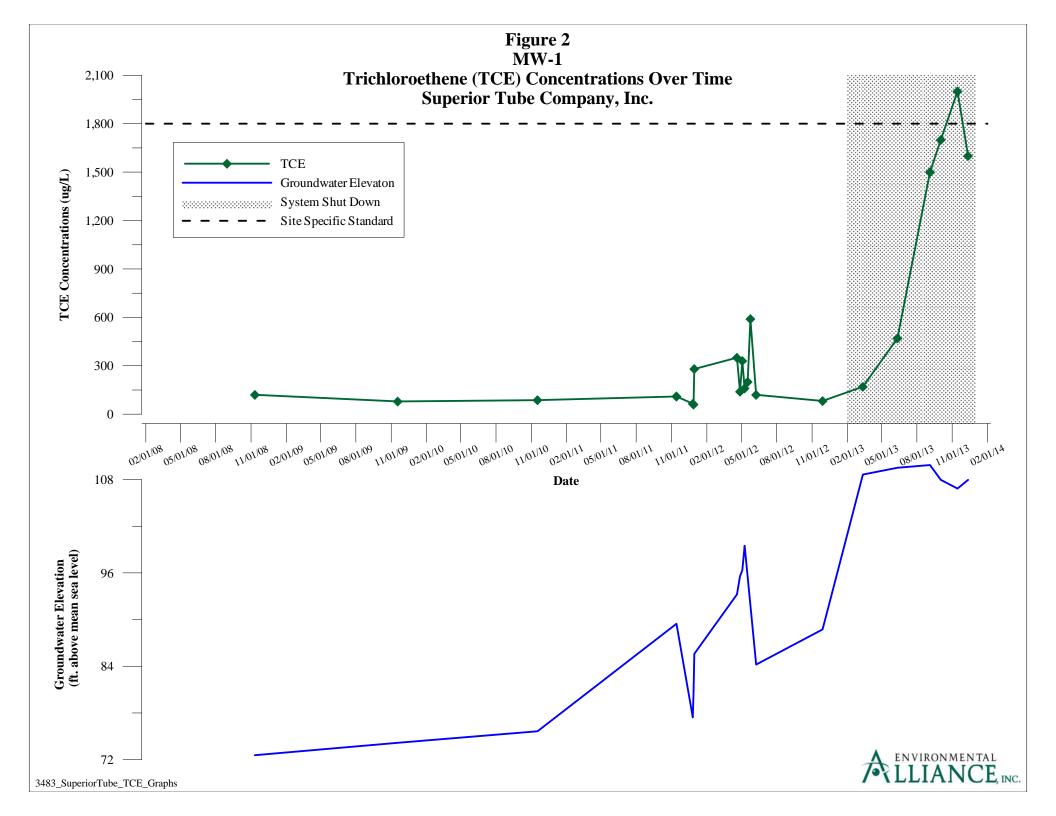
Brian Jacot, Greystone Consolidated Companies, Inc.

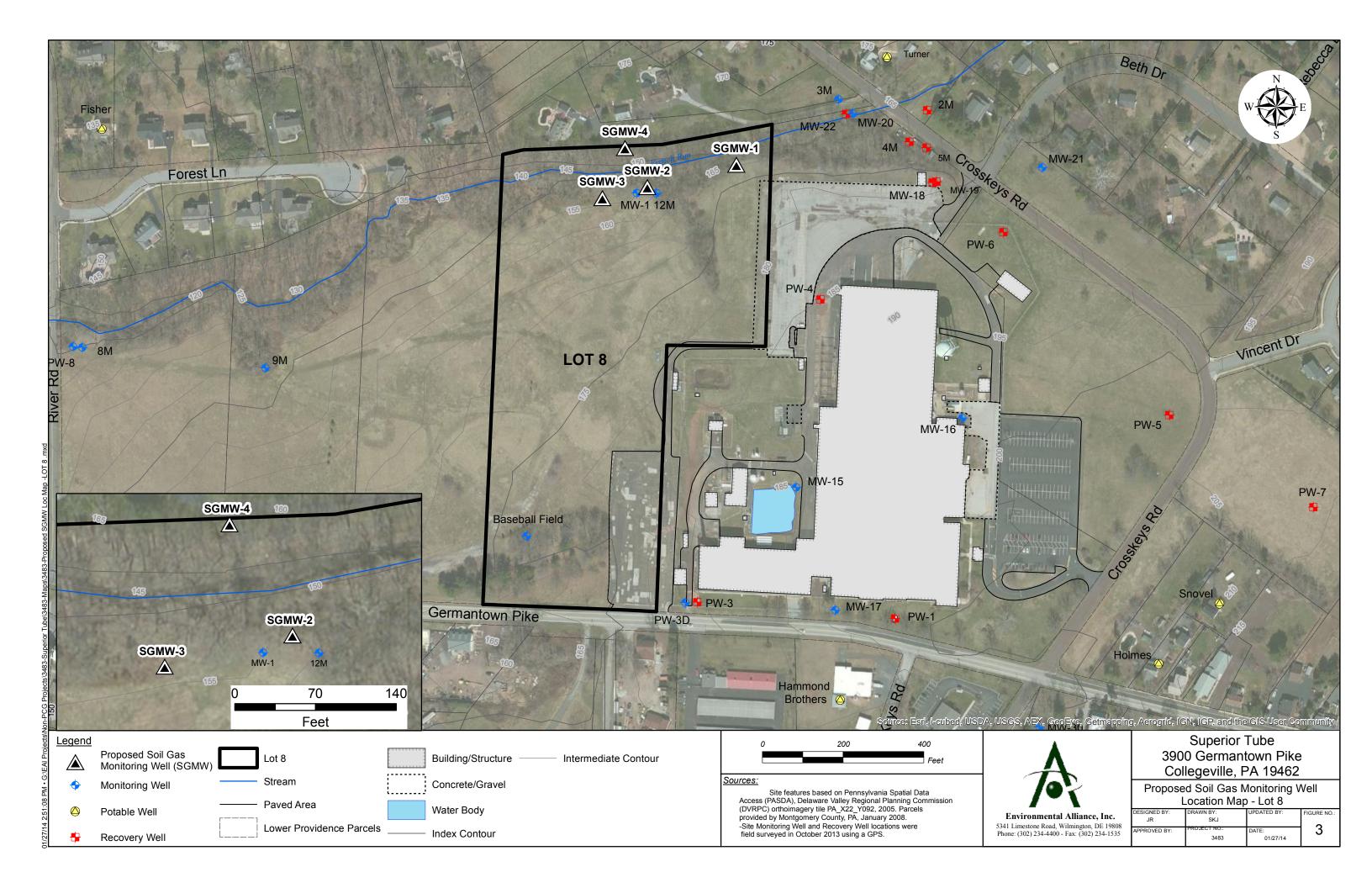
Attachments

FIGURES









ATTACHMENT I LABORATORY ANALYTICAL REPORTS (MARCH THROUGH DECEMBER 2013)





2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Lancaster Laboratories 2425 New Holland Pike Lancaster, PA 17605-2425 Environmental Alliance, Inc. 5341 Limestone Rd Wilmington DE 19808

March 24, 2013

Project: 3483 / Superior Tube, PA

Submittal Date: 03/14/2013 Group Number: 1375604 PO Number: 3483 State of Sample Origin: PA

Client Sample Description	<u>Lancaster Labs (LLI) #</u>
8M0311131116 Grab Groundwater	6983860
MW210311131436 Grab Groundwater	6983861
MW220311131500 Grab Groundwater	6983862
4M0311131540 Grab Groundwater	6983863
FB0311131550 Grab Water	6983864
Trip031113 Water	6983865
SpecksChicken0312131045 Grab Groundwater	6983866
2M0312131030 Grab Groundwater	6983867
PW50312131045 Grab Groundwater	6983868
3M0312131400 Grab Groundwater	6983869
BaseballField0312131222 Grab Groundwater	6983870
BBFFD0312131223 Grab Groundwater	6983871
FB0312131410 Grab Water	6983872
TripBlank031213 Water	6983873
MW-10313131030 Grab Groundwater	<mark>6983874</mark>
MW-1MS0313131031 Grab Groundwater	6983875
MW-1MSD0313131032 Grab Groundwater	6983876
PW3D0313131145 Grab Groundwater	6983877
PW30313131300 Grab Groundwater	6983878
PW-10313131312 Grab Groundwater	6983879
MW150313131500 Grab Groundwater	6983880
MW170313131530 Grab Groundwater	6983881
FB0313131545 Grab Water	6983882
Trip031313 Water	6983883

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC Environmental Alliance, Inc. Attn: Myrna Klair



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Sample Description: MW-10313131030 Grab Groundwater

2604 / Superior Tube, PA

LLI Sample # WW 6983874

LLI Group # 1375604 Account # 07039

Project Name: 3483 / Superior Tube, PA

Collected: 03/13/2013 10:30 by KR Environmental Alliance, Inc.

5341 Limestone Rd

Wilmington DE 19808

Submitted: 03/14/2013 18:10 Reported: 03/24/2013 18:59

M1483

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	
10335	cis-1,2-Dichloroether	ne	156-59-2	26	5	1
10335	trans-1,2-Dichloroetl	nene	156-60-5	< 5	5	1
10335	Tetrachloroethene		127-18-4	< 5	5	1
10335	1,1,1-Trichloroethane	9	71-55-6	< 5	5	1
10335	Trichloroethene		79-01-6	170	5	1
10335	Vinyl Chloride		75-01-4	< 5	5	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/14

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	T130791AA	03/20/2013 11:33	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	T130791AA	03/20/2013 11:33	Linda C Pape	1



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Page 1 of 2

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1375604

Reported: 03/24/13 at 06:59 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank <u>LOO</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: T130771AA	Sample numbe	er(s): 698	3860-6983	864				
cis-1,2-Dichloroethene	< 5	5.	uq/l	101	100	80-120	2	30
trans-1,2-Dichloroethene	< 5	5.	ug/l	100	99	80-120	1	30
Tetrachloroethene	< 5	5.	ug/l	102	99	79-120	3	30
1,1,1-Trichloroethane	< 5	5.	ug/l	114	111	66-126	3	30
Trichloroethene	< 5	5.	ug/l	104	101	80-120	3	30
Vinyl Chloride	< 5	5.	ug/l	91	87	63-120	5	30
Batch number: T130791AA	Sample numbe	er(s): 698	3862,6983	865-698388	33			
cis-1,2-Dichloroethene	< 5	5.	ug/l	97		80-120		
trans-1,2-Dichloroethene	< 5	5.	ug/l	96		80-120		
Tetrachloroethene	< 5	5.	ug/l	99		79-120		
1,1,1-Trichloroethane	< 5	5.	ug/l	107		66-126		
Trichloroethene	< 5	5.	ug/l	100		80-120		
Vinyl Chloride	< 5	5.	ug/l	94		63-120		
Batch number: T130801AA	Sample numbe	er(s): 698	3863					
Trichloroethene	< 5	5.	ug/l	104	98	80-120	6	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS <u>%REC</u>	MSD %REC	MS/MSD <u>Limits</u>	<u>RPD</u>	RPD <u>MAX</u>	BKG <u>Conc</u>	DUP <u>Conc</u>	DUP <u>RPD</u>	Dup RPD <u>Max</u>
Batch number: T130791AA	Sample	number(s)	: 6983862	,69838	65-6983	883 UNSPK	: 6983874		
cis-1,2-Dichloroethene	104	103	80-141	0	30				
trans-1,2-Dichloroethene	108	110	81-142	1	30				
Tetrachloroethene	108	107	80-128	0	30				
1,1,1-Trichloroethane	123	122	69-140	1	30				
Trichloroethene	113 (2)	104 (2)	88-133	1	30				
Vinyl Chloride	105	105	66-133	0	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



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Page 2 of 2

Quality Control Summary

80-113

Client Name: Environmental Alliance, Inc. Group Number: 1375604

Reported: 03/24/13 at 06:59 PM

Analysis Name: 8260 VOCs

Surrogate Quality Control

78-113

	mber: T130771AA Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
6983860	110	95	94	102
6983861	110	99	94	102
6983862	110	98	93	100
6983863	111	96	91	102
6983864	109	93	96	102
Blank	106	95	99	105
LCS	103	96	101	110
LCSD	101	94	99	107
Limits:	80-116	77-113	80-113	78-113
	s Name: 8260 VOCs nmber: T130791AA Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
	ımber: T130791AA	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
Batch nu	mber: T130791AA Dibromofluoromethane			
Batch nu 6983865	mber: T130791AA Dibromofluoromethane	95	96	106
Batch nu 6983865 6983866	mber: T130791AA Dibromofluoromethane	95 90	96 98	106 105
6983865 6983866 6983867	mber: T130791AA Dibromofluoromethane	95 90 94	96 98 97	106 105 108
6983865 6983866 6983867 6983868	mber: T130791AA Dibromofluoromethane	95 90 94 92	96 98 97 97	106 105 108 104
6983865 6983866 6983867 6983868 6983869	mber: T130791AA Dibromofluoromethane	95 90 94 92 94	96 98 97 97 96	106 105 108 104
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6983865 6983866 6983866 6983868 6983869 6983870 6983871	mber: T130791AA Dibromofluoromethane 104 101 106 104 106 108 110	95 90 94 92 94 95	96 98 97 97 96 94 93	106 105 108 104 104 104

* Outcide	of	chacification
*- Outside	ΟI	specification

Limits:

Blank

LCS MS

MSD

80-116

77-113

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Lancaster
Laboratories

Acct. # 7039 For Eurofins Lancaster Laboratories use only

Group # /3 500 Sample # 698 5860 85

Instructions on reverse side correspond with circles numbers.

COC # 328801

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Environmental Analysis Request/Chain of Custody

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Environmental Analysis Request/Chain of Custody

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Lancaster Laboratories Acct. # 7039

For Eurofins Lancaster Laboratories use only Group # 137500 Sample # 2 7 8 3860-83
Instructions on reverse side correspond with circled numbers.

COC # 328803

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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than
- J estimated value The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

Inorganic Qualifiers

Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	Ε	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
Ε	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions, and Lancaster hereby objects to any conflicting terms contained in any acceptance or order submitted by client.



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ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories 2425 New Holland Pike Lancaster, PA 17601 Environmental Alliance, Inc. 5341 Limestone Rd Wilmington DE 19808

June 24, 2013

Project: 3483 / Superior Tube, PA

Submittal Date: 06/14/2013 Group Number: 1397364 PO Number: 6485 State of Sample Origin: PA

Client Sample Description	<u>Lancaster Labs (LLI) #</u>
MW-10611131330 Groundwater	<mark>7094245</mark>
PW-50611131345 Groundwater	7094246
PW-10611131450 Groundwater	7094247
FB0611131530 Groundwater	7094248
PW3D0612131230 Groundwater	7094249
PW3DDup0612131235 Groundwater	7094250
PW30612131505 Groundwater	7094251
FB0612131530 Groundwater	7094252
3M0613130830 Groundwater	7094253
MW150613131030 Groundwater	7094254
MSMW150613131035 Groundwater	7094255
MSDMW150613131040 Groundwater	7094256
FB0613131100 Water	7094257
Trip_Blank061313 Water	7094258
MW170614131100 Groundwater	7094259
FB0614131115 Water	7094260
Trip_Blank061413 Water	7094261

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC Environmental Alliance, Inc. Attn: Myrna Klair

COPY TO



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Respectfully Submitted,

Mgn Moeller Senior Specialist

(717) 556-7261



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Sample Description: MW-10611131330 Groundwater

3483 / Superior Tube, PA

LLI Sample # WW 7094245 LLI Group # 1397364 Account # 07039

Project Name: 3483 / Superior Tube, PA

Collected: 06/11/2013 13:30 by KR Environmental Alliance, Inc.

5341 Limestone Rd Wilmington DE 19808

Submitted: 06/14/2013 18:05

Reported: 06/24/2013 17:00

SPT01

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	
10335	cis-1,2-Dichloroether	ne	156-59-2	59	5	1
10335	trans-1,2-Dichloroetl	nene	156-60-5	< 5	5	1
10335	Tetrachloroethene		127-18-4	< 5	5	1
10335	1,1,1-Trichloroethane	9	71-55-6	< 5	5	1
10335	Trichloroethene		79-01-6	470	50	10
10335	Vinyl Chloride		75-01-4	< 5	5	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/14

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

			_	_			
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	T131711AA	06/20/2013 17:26	Linda C Pape	1
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	T131711AA	06/20/2013 17:50	Linda C Pape	10
	GC/MS VOA Water Prep GC/MS VOA Water Prep	SW-846 5030B SW-846 5030B	1 2	T131711AA T131711AA	06/20/2013 17:26 06/20/2013 17:50	Linda C Pape Linda C Pape	1 10



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Page 1 of 3

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1397364

Reported: 06/24/13 at 05:00 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank <u>LOO</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: N131683AA cis-1,2-Dichloroethene trans-1,2-Dichloroethene	Sample numbers 5 < 5	er(s): 709 5. 5.	94254-7094 ug/l ug/l	259 98 102		80-120 80-120		
Tetrachloroethene 1,1,1-Trichloroethane Trichloroethene	< 5 < 5 < 5	5. 5. 5.	ug/l ug/l ug/l	104 111 102		79-120 66-126 80-120		
Vinyl Chloride Batch number: T131711AA	< 5 Sample number				51-7094253			
cis-1,2-Dichloroethene trans-1,2-Dichloroethene Tetrachloroethene	< 5 < 5 < 5	5. 5. 5.	ug/l ug/l ug/l	106 110 98		80-120 80-120 79-120		
1,1,1-Trichloroethane Trichloroethene Vinyl Chloride	< 5 < 5 < 5	5. 5. 5.	ug/l ug/l ug/l	109 105 86		66-126 80-120 63-120		
Batch number: T131712AA	Sample numbe	er(s): 709	4249-7094	250,709426	0-7094261			
cis-1,2-Dichloroethene trans-1,2-Dichloroethene Tetrachloroethene 1,1,1-Trichloroethane Trichloroethene Vinyl Chloride	< 5	5. 5. 5. 5. 5.	ug/l ug/l ug/l ug/l ug/l ug/l	105 101 96 98 106 85	108 106 97 104 105 86	80-120 80-120 79-120 66-126 80-120 63-120	2 5 0 6 2 1	30 30 30 30 30 30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD <u>%REC</u>	MS/MSD <u>Limits</u>	RPD	RPD <u>MAX</u>	BKG Conc	DUP <u>Conc</u>	DUP <u>RPD</u>	Dup RPD <u>Max</u>
Batch number: N131683AA	Sample	number(s)	: 7094254	1-70942	59 UNSI	PK: 7094254			
cis-1,2-Dichloroethene	105	106	80-141	1	30				
trans-1,2-Dichloroethene	111	113	81-142	1	30				
Tetrachloroethene	111	120	80-128	3	30				
1,1,1-Trichloroethane	116	116	69-140	0	30				
Trichloroethene	-138 (2)	-37 (2)	88-133	3	30				
Vinyl Chloride	99	101	66-133	1	30				
Batch number: T131711AA	Sample	number(s)	: 7094245	5-70942	48,7094	1251-709425	3 UNSPK: P	093502	

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

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Page 2 of 3

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1397364

Reported: 06/24/13 at 05:00 PM

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

	MS	MSD	MS/MSD		RPD	BKG	DUP	DUP	Dup RPD
<u>Analysis Name</u>	%REC	%REC	<u>Limits</u>	RPD	MAX	Conc	Conc	RPD	<u>Max</u>
cis-1,2-Dichloroethene	113	112	80-141	2	30				
trans-1,2-Dichloroethene	117	115	81-142	1	30				
Tetrachloroethene	105	108	80-128	3	30				
1,1,1-Trichloroethane	113	107	69-140	5	30				
Trichloroethene	116	113	88-133	2	30				
Vinyl Chloride	90	88	66-133	2	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260 VOCs Batch number: N131683AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene	
7094254	104	102	96	94	
7094255	104	98	98	98	
7094256	103	99	99	99	
7094257	103	100	97	93	
7094258	105	103	95	93	
7094259	105	102	95	91	
Blank	104	100	96	93	
LCS	102	99	99	99	
MS	104	98	98	98	
MSD	103	99	99	99	
Limits:	80-116	77-113	80-113	78-113	

Analys	sis	Name	:	8260)	VOCs
Batch	nun	mber:		T1317	71	1AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene	
7094245	105	106	100	100	
7094246	100	101	98	98	
7094247	103	101	96	98	
7094248	95	96	98	95	
7094251	104	104	99	100	
7094252	93	81	102	94	
7094253	104	102	97	99	
Blank	101	101	96	98	
LCS	101	99	97	100	
MS	102	104	98	101	
MSD	102	102	100	102	
Limits:	80-116	77-113	80-113	78-113	

Analysis Name: 8260 VOCs Batch number: T131712AA

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.



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Page 3 of 3

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1397364

Reported: 06/24/13 at 05:00 PM

Surrogate Quality Control

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene	
7094249	106	104	99	101	
7094250	107	102	98	102	
7094260	107	105	99	100	
7094261	105	101	101	101	
Blank	104	105	98	99	
LCS	103	103	99	101	
LCSD	102	103	99	100	
Limits:	80-116	77-113	80-113	78-113	

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

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Project Name#: SWPLY OF TWO # 3 Project Manager WE RUSS	PWSID #		Sediment	Ground Surface	:	ers	77.4						Preservat H=HCI N=HNO ₃ S=H ₂ SO ₄	tion Coo T=Thios B=NaO O=Othe	sulfate)H
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Type IV (CLP SOW)	MA MCP CT RCP	ı	111111111111111111111111111111111111111							Temperature upon receipt <u>3 · ↓</u> °C					

(If yes, indicate QC sample and submit triplicate sample volume.)

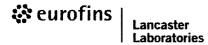
Environmental Analysis Request/Chain of Custody

Lancaster Laboratories Acct. # <u>7039</u>

For Eurofins Lancaster Laboratories use only
Group # 1397369 Sample # 7099295-61
Instructions on reverse side correspond with circled numbers.

COC #324541

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■ Type IV (CLP SOW) MA MCP CT RCP I ' ' I temperature upon receipt ' ' I temperature upon receipt ' ' '	1,750 (1.1344354 11511 521 /																
	Type IV (CLP SOW) MA MCP CT RCP	Site-Specific QC (MS/MSD/Dup)? Yes No (If yes, indicate QC sample and submit triplicate sample volume.)			Temperature upon receipt <u>'3 '\</u> °C												



Environmental Sample Administration Receipt Documentation Log 1397364

Client/	Client/Project: Env alliance Shipping Container Sealed: YES (NO)													
Date of	f Receipt: _	011411	3	Custod	, Soal Brog	ont*:	YES	(NO)						
Time	f Receipt:	208		_	y Seal Pres									
i ime o	r Keceipt: 1	<u> </u>	•	* Custody seal was intact unless otherwise noted in the discrepancy section										
Source	Code:	3]	<u> </u>	Package	e:	(Chilled	Not Chilled						
			Temperature of	Shipping Contai	iners									
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (Bagged Id or NA	e (B)	Comments						
1	07/31	3.1	TB	WI	4	B	-							
2					-									
3														
4														
5														
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	vork Discrepa	ıncy/Unpack	OT listed on chain	of custody:										
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Issued by Dept. 6042 Management



Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than
- J estimated value The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis

Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Inorganic Qualifiers

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

Α TIC is a possible aldol-condensation product В Value is <CRDL, but ≥IDL Analyte was also detected in the blank Estimated due to interference В Ε C Pesticide result confirmed by GC/MS М Duplicate injection precision not met Spike sample not within control limits D Compound quantitated on a diluted sample Ν Concentration exceeds the calibration range of Method of standard additions (MSA) used Ε S the instrument for calculation Ν Presumptive evidence of a compound (TICs only) U Compound was not detected Post digestion spike out of control limits Concentration difference between primary and W confirmation columns >25% Duplicate analysis not within control limits Compound was not detected Correlation coefficient for MSA < 0.995 X,Y,ZDefined in case narrative

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions, and Lancaster hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Environmental Alliance, Inc. 5341 Limestone Rd Wilmington DE 19808

September 18, 2013

Project: 3483 / Superior Tube, PA

Submittal Date: 09/06/2013 Group Number: 1417115 PO Number: 6983 State of Sample Origin: PA

Client Sample Description	Lancaster Labs (LL) #
8M0903131245 Grab Groundwater	7188948
BBField0903131135 Grab Groundwater	7188949
MW210903131350 Grab Groundwater	7188950
2M0903131430 Grab Groundwater	7188951
MW220903131340 Grab Groundwater	7188952
4M0903131400 Grab Groundwater	7188953
FB0903131510 Grab Water	7188954
Trip_Blank090313 Water	7188955
MW10904130945 Grab Groundwater	<mark>7188956</mark>
PW50904131010 Grab Groundwater	7188957
R39690904131020 Grab Groundwater	7188958
PW10904131150 Grab Groundwater	7188959
PW1DUP0904131150 Grab Groundwater	7188960
MW170904131300 Grab Groundwater	7188961
MW17MS0904131300 Grab Groundwater	7188962
MW17MSD0904131300 Grab Groundwater	7188963
PW30904131410 Grab Groundwater	7188964
PW3D0904131250 Grab Groundwater	7188965
FB0904131530 Grab Water	7188966
Trip_Blank090413 Water	7188967
MW150905131040 Grab Groundwater	7188968
3M0905131125 Grab Groundwater	7188969
FB0905131215 Grab Water	7188970
Trip_Blank090513 Water	7188971

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC Environmental Alliance, Inc. Attn: Myrna Klair



Lancaster Laboratories Environmental

Analysis Report

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Sample Description: MW10904130945 Grab Groundwater

3483 / Superior Tube, PA

LL Sample # WW 7188956 LL Group # 1417115 Account # 07039

Project Name: 3483 / Superior Tube, PA

Collected: 09/04/2013 09:45 by KR Environmental Alliance, Inc.

5341 Limestone Rd

Submitted: 09/06/2013 16:40 Wilmington DE 19808

Reported: 09/18/2013 17:52

ST-01

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	
10335	cis-1,2-Dichloroeth	iene	156-59-2	87	5	1
10335	trans-1,2-Dichloroe	thene	156-60-5	< 5	5	1
10335	Tetrachloroethene		127-18-4	6	5	1
10335	1,1,1-Trichloroetha	ine	71-55-6	< 5	5	1
10335	Trichloroethene		79-01-6	1,500	50	10
10335	Vinyl Chloride		75-01-4	< 5	5	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/14

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	L132541AA	09/11/2013 11:18	Stephanie A Selis	1
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	L132541AA	09/11/2013 11:40	Stephanie A Selis	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	L132541AA	09/11/2013 11:18	Stephanie A Selis	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	L132541AA	09/11/2013 11:40	Stephanie A Selis	10



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Environmental

Page 1 of 2

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1417115

Reported: 09/18/13 at 05:52 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank <u>LOO</u>	Report <u>Units</u>	LCS %REC	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: L132541AA	Sample numbe	er(s): 718	88948-7188	960.718896	4-7188965			
cis-1,2-Dichloroethene	< 5	5.	ug/l	92	95	80-120	3	30
trans-1,2-Dichloroethene	< 5	5.	ug/l	95	97	80-120	2	30
Tetrachloroethene	< 5	5.	ug/l	99	101	80-120	1	30
1,1,1-Trichloroethane	< 5	5.	ug/l	95	97	66-126	2	30
Trichloroethene	< 5	5.	ug/l	96	98	80-120	3	30
Vinyl Chloride	< 5	5.	ug/l	86	89	63-120	3	30
Batch number: L132543AA	Sample numbe	er(s): 718	88961-7188	963,718896	55-7188971			
cis-1,2-Dichloroethene	< 5	5.	ug/l	96		80-120		
trans-1,2-Dichloroethene	< 5	5.	ug/l	99		80-120		
Tetrachloroethene	< 5	5.	ug/l	105		80-120		
1,1,1-Trichloroethane	< 5	5.	ug/l	99		66-126		
Trichloroethene	< 5	5.	ug/l	98		80-120		
Vinyl Chloride	< 5	5.	ug/l	88		63-120		
Batch number: L132551AA	Sample numbe	er(s): 718	8969					
Trichloroethene	< 5	5.	ug/l	97	97	80-120	1	30

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

<u>Analysis Name</u>	MS %REC	MSD %REC	MS/MSD <u>Limits</u>	<u>RPD</u>	RPD <u>MAX</u>	BKG <u>Conc</u>	DUP <u>Conc</u>	DUP <u>RPD</u>	Dup RPD <u>Max</u>
Batch number: L132543AA	Sample	number(s)	: 7188961	-718896	53,7188	965-7188971	UNSPK:	7188961	
cis-1,2-Dichloroethene	99	100	80-141	1	30				
trans-1,2-Dichloroethene	104	105	81-142	1	30				
Tetrachloroethene	109	110	80-128	1	30				
1,1,1-Trichloroethane	112	113	69-140	1	30				
Trichloroethene	107	109	88-133	1	30				
Vinyl Chloride	96	95	66-133	1	30				

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.





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Page 2 of 2

Quality Control Summary

Group Number: 1417115 Client Name: Environmental Alliance, Inc.

Reported: 09/18/13 at 05:52 PM

Surrogate Quality Control

Analysis Name: 8260 VOCs Batch number: L132541AA

7188961 106 107 7188962 103 104 7188963 102 102 7188966 103 106 7188967 105 105 7188968 106 106 7188969 107 105 7188970 106 104 7188971 106 107 Blank 108 106 LCS 103 105	2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7188949 108 109 7188950 106 108 7188951 108 107 7188952 109 109 7188953 109 108 7188954 105 106 7188955 105 108 7188956 110 106 7188957 106 106 7188958 107 107 7188950 108 108 7188964 108 108 7188965 107 107 7188965 107 107 8188965 107 107 81ank 105 106 LCS 101 103 LCSD 101 103 Limits: 80-116 77-1 Analysis Name: 8260 VOCs Batch number: L132543AA Dibromofluoromethane 1,2-Di 7188963 102 102 7188966 103 104 7188967 105 105 7188968 106 106 7188969 107 105 7188970 106 104 7188971 106 LCS 103 106 LCS 103 106 R188971 106 RCS 103 106 RCS 103 106 R188971 106 RCS 103 106 RCS 107 R188971 106 RCS 103 105	7	97	93
7188950 106 108 7188951 108 107 7188952 109 109 7188953 109 106 7188955 105 106 7188955 105 108 7188956 110 106 7188957 106 106 7188958 107 107 7188960 108 108 7188964 108 108 7188965 107 107 7188965 107 107 81ank 105 106 LCS 101 103 LCSD 101 103 Limits: 80-116 77-1 Analysis Name: 8260 VOCs Batch number: L132543AA Dibromofluoromethane 1,2-Di 7188961 106 107 7188962 103 104 7188963 102 102 7188966 103 106 7188967 105 105 7188968 106 106 7188969 107 105 7188970 106 104 7188971 106 LCS 103 106 LCS 101 107 8188971 106 LCS 103 106 LCS 103 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 106 F188971 107 F188971 106 F188971 107		97	91
7188951 108 107 7188952 109 109 7188953 109 108 7188954 105 106 7188955 105 108 7188956 110 106 7188957 106 106 7188958 107 107 7188960 108 108 7188961 107 107 7188965 107 107 818965 107 107 818965 107 107 818965 107 107 81ank 105 106 LCS 101 103 LCSD 101 103 Limits: 80-116 77-1 Analysis Name: 8260 VOCs Batch number: L132543AA Dibromofluoromethane 1,2-Di 7188961 106 107 7188962 103 104 7188963 102 102 7188966 103 106 7188967 105 105 7188968 106 106 7188969 107 105 7188970 106 104 7188971 106 LCS 103 106 LCS 103 106 R188971 106 R188971 106 RCS 103 106 RCS 103 106 R188971 106 RCS 103 105		98	92
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7188953 109 108 7188954 105 106 7188955 105 108 7188956 110 106 7188957 106 106 7188958 107 107 7188959 107 107 7188960 108 108 7188965 107 107 Blank 105 106 LCS 101 103 LCSD 101 103 Limits: 80-116 77-1 Analysis Name: 8260 VOCs Batch number: L132543AA Dibromofluoromethane 1,2-Di 7188961 106 107 7188962 103 104 7188963 102 102 7188966 103 106 7188967 105 105 7188968 106 106 7188969 107 105 7188970 106 104 7188971 106 LCS 103 106 LCS 103 106 LCS 103 106 LCS 103 106 T188971 106 LCS 107 F188971 106 LCS 103 105		98	91
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7188957 106 106 7188958 107 107 7188959 107 107 7188960 108 108 7188964 108 108 7188965 107 107 Blank 105 106 LCS 101 103 Limits: 80-116 77-1 Analysis Name: 8260 VOCs Batch number: L132543AA Dibromofluoromethane 1,2-Di 7188961 106 107 7188963 102 102 7188966 103 106 7188967 105 105 7188968 106 106 7188969 107 105 7188970 106 104 7188971 106 LCS 103 105		99	89
7188958 107 107 7188959 107 107 7188960 108 108 7188964 108 108 7188965 107 107 Blank 105 106 LCS 101 103 LCSD 101 103 Limits: 80-116 77-1 Analysis Name: 8260 VOCs Batch number: L132543AA Dibromofluoromethane 1,2-Di 7188961 106 107 7188962 103 104 7188963 102 102 7188966 103 106 7188969 107 105 7188969 107 7188970 106 106 7188971 106 LCS 103 106 LCS 103 106 LCS 103 106 LCS 103 106		97	92
7188959 107 107 7188960 108 108 7188964 108 108 7188965 107 107 Blank 105 106 LCS 101 103 LCSD 101 103 Limits: 80-116 77-1 Analysis Name: 8260 VOCs Batch number: L132543AA Dibromofluoromethane 1,2-Di 7188961 106 107 7188962 103 104 7188963 102 102 7188966 103 106 7188967 105 105 7188968 106 106 7188969 107 105 7188970 106 104 7188971 106 LCS 103 106 LCS 103 106 LCS 103 106 LCS 103 106		97	92
7188960 108 108 7188964 108 108 7188965 107 107 Blank 105 106 LCS 101 103 LCSD 101 103 Limits: 80-116 77-1 Analysis Name: 8260 VOCs Batch number: L132543AA Dibromofluoromethane 1,2-Di 7188961 106 107 7188962 103 104 7188963 102 102 7188966 103 106 7188967 105 105 7188968 106 106 7188969 107 105 7188970 106 104 7188971 106 107 Blank 108 106 LCS 103 106		96	91
7188964 108 108 7188965 107 107 Blank 105 106 LCS 101 103 LCSD 101 103 Limits: 80-116 77-3 Analysis Name: 8260 VOCs Batch number: L132543AA Dibromofluoromethane 1,2-Di 7188961 106 107 7188963 102 102 7188966 103 106 7188967 105 105 7188968 106 106 7188969 107 105 7188970 106 104 7188971 106 107 81ank 108 106 LCS 103 106		97	92
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78-113

80-113

Limits: 80-116

77-113

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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(If yes, indicate QC sample and submit triplicate sample volume.)

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Type IV (CLP SOW)

MA MCP

CT RCP

Environmental Analysis Request/Chain of Custody

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Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

_°C

Temperature upon receipt <u>U.U.</u>

Type IV (CLP SOW)

MA MCP

CT RCP



Environmental Sample Administration /1/17/15 **Receipt Documentation Log**

Client/			Alliance	Shipping Container Sealed: YES NO								
Date of	f Receipt:	7/6/13		Custody	y Seal Pres	sent*: YE	s NO					
Time o	f Receipt: _	1640	***************************************		seal was inta	ct unless otherwise	noted in the					
Source	Code:	01		Packag		Chilled	Not Chilled					
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Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (L) Bagged Ice (B) or NA	Comments					
1	DTIZI	4.4	TB	M	Y	B						
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Paperwork Discrepancy/Unpacking Problems:												
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Issued by Dept. 6042 Management												



Lancaster Laboratories Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weightbasis
Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

	Organic Qualifiers		Inorganic Qualifiers
Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	Ε	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
Ε	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Environmental Alliance, Inc. 5341 Limestone Rd Wilmington DE 19808

October 14, 2013

Project: 3483 / Superior Tube, PA

Submittal Date: 10/03/2013 Group Number: 1423763 PO Number: 7172 State of Sample Origin: PA

Client Sample Description	<u>Lancaster Labs (LL) #</u>
BBField1002131030 Grab Groundwater	7224103
MW221002131220 Grab Groundwater	7224104
MW11002131220 Grab Groundwater	<mark>7224105</mark>
2M1002131240 Grab Groundwater	7224106
4M1002131305 Grab Groundwater	7224107
MW151002131500 Grab Groundwater	7224108
FB1002131530 Water	7224109
Trip_Blank100213 Water	7224110

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO

Environmental Alliance, Inc.

Attn: Myrna Klair

Respectfully Submitted,

Mgn Moeller Senior Specialist

(717) 556-7261



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW11002131220 Grab Groundwater

3483 / Superior Tube, PA

LL Sample # WW 7224105 LL Group # 1423763 Account # 07039

Project Name: 3483 / Superior Tube, PA

Collected: 10/02/2013 12:20 by KR Environmental Alliance, Inc.

5341 Limestone Rd

Submitted: 10/03/2013 17:00 Wilmington DE 19808

Reported: 10/14/2013 08:21

MW1--

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles S	SW-846	8260B	ug/l	ug/l	
10335	cis-1,2-Dichloroether	ie	156-59-2	88	10	2
10335	trans-1,2-Dichloroeth	iene	156-60-5	< 10	10	2
10335	Tetrachloroethene		127-18-4	< 10	10	2
10335	1,1,1-Trichloroethane	<u> </u>	71-55-6	< 10	10	2
10335	Trichloroethene		79-01-6	1,700	100	20
10335	Vinyl Chloride		75-01-4	< 10	10	2

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/14

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	N132832AA	10/11/2013 05:35	Andrea E Lando	2
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	N132832AA	10/11/2013 05:59	Andrea E Lando	20
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N132832AA	10/11/2013 05:35	Andrea E Lando	2
01163	GC/MS VOA Water Prep	SW-846 5030B	2	N132832AA	10/11/2013 05:59	Andrea E Lando	20



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Environmental

Page 1 of 2

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1423763

Reported: 10/14/13 at 08:21 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank <u>LOO</u>	Report <u>Units</u>	LCS %REC	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: N132832AA	Sample numbe	er(s): 722	4103-7224	107				
cis-1,2-Dichloroethene	< 5	5.	uq/l	107	106	80-120	1	30
trans-1,2-Dichloroethene	< 5	5.	ug/l	110	108	80-120	1	30
Tetrachloroethene	< 5	5.	ug/l	102	104	80-120	2	30
1,1,1-Trichloroethane	< 5	5.	ug/l	110	110	66-126	0	30
Trichloroethene	< 5	5.	ug/l	109	109	80-120	0	30
Vinyl Chloride	< 5	5.	ug/l	102	99	63-120	3	30
Batch number: N132842AA	Sample numbe	er(s): 722	4107-7224	110				
cis-1,2-Dichloroethene	< 5	5.	ug/l	105	104	80-120	1	30
trans-1,2-Dichloroethene	< 5	5.	ug/l	107	105	80-120	2	30
Tetrachloroethene	< 5	5.	ug/l	101	101	80-120	0	30
1,1,1-Trichloroethane	< 5	5.	ug/l	114	114	66-126	0	30
Trichloroethene	< 5	5.	ug/l	107	107	80-120	0	30
Vinyl Chloride	< 5	5.	ug/l	98	97	63-120	1	30

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260 VOCs Batch number: N132832AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene	
7224103	101	102	100	96	
7224104	102	102	102	97	
7224105	102	102	101	96	
7224106	102	102	102	96	
7224107	102	102	101	96	
Blank	100	102	101	97	
LCS	101	101	103	100	
LCSD	100	102	102	100	
Limits:	80-116	77-113	80-113	78-113	

Analysis Name: 8260 VOCs Batch number: N132842AA

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Analysis Report

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Page 2 of 2

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1423763

Reported: 10/14/13 at 08:21 AM

Surrogate Quality Control

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
7224108	100	102	101	97
7224109	100	101	101	97
7224110	100	101	101	97
Blank	98	101	101	99
LCS	100	102	102	99
LCSD	100	101	101	99
Limits:	80-116	77-113	80-113	78-113

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Lancaster Laboratories Acct. # 7039

COC #324344

1) Client Informatio	n		4	Matrix			(5)		Analy	/sis	Reque	estec	j	TA 7 9256 90 70 Y	For La	ıb Use Only	,
Client:	Acct. #:							Selection of the Select			ion Co				FSC:	,	
Environmental Alliance															SCR#:	14121	7
Project Name/#: Superior Tube #3983	PWSID #:		Ų	Ground Surface			70								Р	reservatio	n Codes
Project Manager:	P.O. #:		Sediment	in ju			2 3					1			i i		=Thiosulfate
JOC 160551	7172)	i. E			S	\$ 9					İ			8		S=NaOH D=Other
Sampler:	Quote #:		Sec	ഥ비		ine	50								EXAMPLE BUILDING	Remarks	-Other
Name of state where samples were collected:				ble ES		Containers	0.2							i i	1	Comando	
Name of state where samples were collected:		(3) <u>a</u>		Potable NPDES		f Co	37										
2)		soo	П		'	# of	8 1							İ			
Sample Identification	Collected	Grab (Soil	Water	Other:	Total#	MA										
0.00	Date Time	<u>5</u> 5	လိ	×	ŏ	r	62										
BBField	10/2/13 1030	i/		8		3	7										
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2M	10/2/13 1240			1-		3	X										
4M	10/2/13 1305	1				3	7										
MW15	10/2/13 /500					3	X										
FB	10/2/13 /536					3	8										
Trip Blank				1		a	λ										
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(Rush TAT is subject to Lancaster Laboratories approval ar	ush	Boff Relinquished I	<u>C (</u>	Storag	<u> 10.</u>	6		19-13	<i>I</i> D€	E)	12	eu	<u>Kr</u>	490	V	47/	13/000
(Nash PAT is subject to cancaster caporatories approval at	u surcharge.)	///	18	INE	200 j		Da	G/12	1 2 4 .	50	Receive	ару			-	Date	Time
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8 Data Package Options (circle if required)	EZ-END	J.	9	rling	30V			9112		W		- Maria kang ang					
Type I (Validation/non-CLP) Type VI (I	Raw Data Only)	Relinquished t	рy			Vocase	Da	te	Time		Received	by S	45			10/3/13	Time
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Type IV (CLP SOW) MA MCP	CT RCP			cific QC (No			Tem	perati	ire iino	n receip	13.0	°C
		(If yes,	indica	te QC sampl	e and s	ubmit t	riplicate s	sample vo	lume.)			10111	- oracl	are upo	ıı receib		—



Environmental Sample Administration 1463163 **Receipt Documentation Log**

Client/I	Project: En	wind mento	il Allianee	Shippin	g Containe	er Sealed:	YES	NO	
Date of	Receipt: 🔼	3 13		Custody	/ Seal Pres	ent * :	YES	(NO	
Time o	f Receipt:	1700		* Custody seal was intact unless otherwise noted in the discrepancy section					
Source	Code:) [Package		(hilled	Not Chilled	
			Temperature of	Shipping Contai	ners				
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (I Bagged Ic or NA	e (B)	Comments	
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Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weightbasis
Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

J - estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

	Organic Qualifiers		Inorganic Qualifiers
Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	E	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
Ε	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Analysis Report

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ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Environmental Alliance, Inc. 5341 Limestone Rd Wilmington DE 19808

December 03, 2013

Project: 3483 / Superior Tube, PA

Submittal Date: 11/19/2013 Group Number: 1435152 PO Number: 7447 State of Sample Origin: PA

Client Sample Description

BBField1115131115 Grab Groundwater MW-11115131245 Grab Groundwater MW151115131500 Grab Groundwater FB1115131505 Grab Water Trip_Blank111513 Water Lancaster Labs (LL) #

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO

Environmental Alliance, Inc.

Attn: Myrna Klair

fort Moelln

Respectfully Submitted,

Megan A. Moeller Senior Specialist

(717) 556-7261



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-11115131245 Grab Groundwater

3483 / Superior Tube, PA

LL Sample # WW 7283886 LL Group # 1435152 Account # 07039

Project Name: 3483 / Superior Tube, PA

Collected: 11/15/2013 12:45 by KR Environmental Alliance, Inc.

5341 Limestone Rd

Submitted: 11/19/2013 18:05 Wilmington DE 19808

Reported: 12/03/2013 14:01

--MW1

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles SW-	846 8260B	ug/l	ug/l	
10335	cis-1,2-Dichloroethene	156-59-2	100	5	1
10335	trans-1,2-Dichloroethene	156-60-5	< 5	5	1
10335	Tetrachloroethene	127-18-4	7	5	1
10335	1,1,1-Trichloroethane	71-55-6	< 5	5	1
10335	Trichloroethene	79-01-6	2,000	50	10
10335	Vinyl Chloride	75-01-4	< 5	5	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/14

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	N133311AA	11/27/2013 17:32	Linda C Pape	1
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	N133311AA	11/27/2013 17:56	Linda C Pape	10
01163	GC/MS VOA Water Prep	SW-846 5030B	1	N133311AA	11/27/2013 17:32	Linda C Pape	1
01163	GC/MS VOA Water Prep	SW-846 5030B	2	N133311AA	11/27/2013 17:56	Linda C Pape	10



Analysis Report

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Page 1 of 2

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1435152

Reported: 12/03/13 at 02:01 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank <u>LOO</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD %REC	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: N133311AA	Sample numbe	er(s): 728	3885-7283	886,728388	88-7283889			
cis-1,2-Dichloroethene	< 5	5.	ug/l	100	102	80-120	2	30
trans-1,2-Dichloroethene	< 5	5.	ug/l	104	107	80-120	3	30
Tetrachloroethene	< 5	5.	ug/l	99	101	80-120	2	30
1,1,1-Trichloroethane	< 5	5.	ug/l	94	96	66-126	2	30
Trichloroethene	< 5	5.	ug/l	105	108	80-120	3	30
Vinyl Chloride	< 5	5.	ug/l	82	83	63-120	2	30
Batch number: N133313AA	Sample numbe	er(s): 728	3887					
cis-1,2-Dichloroethene	< 5	5.	ug/l	103	103	80-120	0	30
trans-1,2-Dichloroethene	< 5	5.	ug/l	107	107	80-120	0	30
Tetrachloroethene	< 5	5.	ug/l	102	100	80-120	2	30
1,1,1-Trichloroethane	< 5	5.	ug/l	100	99	66-126	1	30
Trichloroethene	< 5	5.	ug/l	109	108	80-120	0	30
Vinyl Chloride	< 5	5.	ug/l	78	79	63-120	1	30

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260 VOCs Batch number: N133311AA

Davoir ira	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene	
7283885	107	105	100	91	
7283886	108	105	102	90	
7283888	107	104	100	90	
7283889	107	104	100	90	
Blank	105	104	101	91	
LCS	102	105	103	98	
LCSD	103	103	104	99	
Limits:	80-116	77-113	80-113	78-113	

Analysis Name: 8260 VOCs Batch number: N133313AA

Dibromofluoromethane 1,2-Dichloroethane-d4 Toluene-d8 4-Bromofluorobenzene

- *- Outside of specification
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Analysis Report

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Page 2 of 2

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1435152

Reported: 12/03/13 at 02:01 PM

Surrogate Quality Control

7283887	104	104	101	92
Blank	107	105	100	91
LCS	104	103	104	100
LCSD	103	103	102	99
Limits:	80-116	77-113	80-113	78-113

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

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Lancaster Laboratories

Acct. # 7039 For

COC# 339182

1) Client Informatio	((4) Matrix (5) Analysis Requested F						For Lab Us	e Only										
Olient:	Acct. #:									}	reser	ation	Codes	5	digageores en com		FSC:	11	
Environmental Alliance Project Name/#:					$ \mathbf{Q} $						llates in the triby gains generation.						SCR#:_/	tG90	6
Project Name/#:	PWSID #:				Ground			22									Pres	ervation (odes
Superior Tube #3483				ž	Ground						l						H=HCI	T =Th	niosulfate
Project Manager:	P.O. #:	JUT		E	ษั ซี		10	SEE			l					Santitones	N=HNO	-	10
Jul Rossi		77/		Sediment			er.	33		1							S=H ₂ SC	Charles Charles Charles Control of the Control	
Sampler:	Quote #:			ű			<u>ä</u> .	7.77		i							6)	Remarks	<u> </u>
K. C. C. C. C. C. C. C. C. C. C. C. C. C.	L				Potable NPDES		Containers	33		l						Annual Control			
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	1		osi	П			0	PCE											
Sample Identification	Collecte	ed 🚊	g	Ш	fer	9	<u>=</u>												
Sample Identification	Date 1	ed දුළ Time	Composite	Soil	Water	Other:	Total # of	7CE,		l		l				around release			
BBField		115			./		3	1/	,						per en en en en en en en en en en en en en				
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•		1	U ci	UA.	28/1		II DE TRE			r.	102	\$7	L	Lu	<u> </u>	5	27 TAI	11/9/13	800
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			,,					Sec. 10.							000000000000000000000000000000000000000		NOT CONTROL OF THE CONTROL OF		



Environmental Sample Administration Receipt Documentation Log

1435152

Client/	Project: En	vironmenta	1 Alliance	Shippin	g Containe	er Seale	ed: (YES	NO		
Date o	f Receipt: 👤	119/13		Custody	Seal Pres	ent * :	YES	S NO		
Time o	f Receipt:	805			seal was inta iscrepancy se		otherwise r	noted in the		
Source	Code:	31		Package		,000	Chilled	Not Chilled		
			Temperature of	Shipping Contai	ners		N			
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Bagged	se (L) d Ice (B) NA	Comments		
1	DTIZI	0.3	TB	MI	Y	B				
2			-							
3										
4										
5										
6										
	Number of Trip Blanks received <u>NOT</u> listed on chain of custody: Paperwork Discrepancy/Unpacking Problems:									
Unpac	ker Signature	/Emp#:	32	2308	_ Date/Tir	ne: <u>Ì</u>	19/13	1910		

Issued by Dept. 6042 Management



Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weightbasis
Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

J - estimated value - The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

	Organic Qualifiers		Inorganic Qualifiers
Α	TIC is a possible aldol-condensation product	В	Value is <crdl, but="" th="" ≥idl<=""></crdl,>
В	Analyte was also detected in the blank	Ε	Estimated due to interference
С	Pesticide result confirmed by GC/MS	M	Duplicate injection precision not met
D	Compound quantitated on a diluted sample	N	Spike sample not within control limits
Ε	Concentration exceeds the calibration range of	S	Method of standard additions (MSA) used
	the instrument		for calculation
N	Presumptive evidence of a compound (TICs only)	U	Compound was not detected
Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Environmental Alliance, Inc. 5341 Limestone Rd Wilmington DE 19808

December 27, 2013

Project: 3483 / Superior Tube, PA

Submittal Date: 12/13/2013 Group Number: 1440892 PO Number: 7575 State of Sample Origin: PA

Client Sample Description	<u>Lancaster Labs (LL) #</u>
BBF1209131420 Grab Groundwater	7313242
MW211209131400 Grab Groundwater	7313243
FB1209131430 Grab Water	7313244
PW51211130945 Grab Groundwater	7313245
Specks1211131025 Grab Groundwater	7313246
PW3D1211131020 Grab Groundwater	7313247
PW31211131150 Grab Groundwater	7313248
MW151211131020 Grab Groundwater	7313249
3M1211131330 Grab Groundwater	7313250
FB1211131350 Grab Water	7313251
MW11212131130 Grab Groundwater	7313252
MW1MS1212131140 Grab Groundwater	7313253
MW1MSD1212131145 Grab Groundwater	7313254
MW1DUP1212131135 Grab Groundwater	7313255
MW171212131135 Grab Groundwater	7313256
8M1212131330 Grab Groundwater	7313257
PW11212131340 Grab Groundwater	7313258
FB1212131400 Grab Water	7313259
Trip_Blank120613 Water	7313260

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO Environmental Alliance, Inc.

Attn: Myrna Klair



Analysis Report

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Sample Description: MW11212131130 Grab Groundwater

3483 / Superior Tube, PA

LL Sample # WW 7313252 LL Group # 1440892 Account # 07039

Project Name: 3483 / Superior Tube, PA

Collected: 12/12/2013 11:30 by KR Environmental Alliance, Inc.

5341 Limestone Rd

Submitted: 12/13/2013 17:15 Wilmington DE 19808

Reported: 12/27/2013 12:37

STP01

CAT No.	Analysis Name		CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	
10335	cis-1,2-Dichloroeth	ene	156-59-2	97	5	1
10335	trans-1,2-Dichloroe	thene	156-60-5	< 5	5	1
10335	Tetrachloroethene		127-18-4	7	5	1
10335	1,1,1-Trichloroetha	ne	71-55-6	< 5	5	1
10335	Trichloroethene		79-01-6	1,600	50	10
10335	Vinyl Chloride		75-01-4	< 5	5	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/14

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	T133512AA	12/18/2013 05:01	Sarah A Guill	1
10335	TCE, PCE, DCE, TCA, VC 8260	SW-846 8260B	1	T133512AA	12/18/2013 06:12	Sarah A Guill	10
01163 01163		SW-846 5030B SW-846 5030B	1 2	T133512AA T133512AA	12/18/2013 05:01 12/18/2013 06:12	Sarah A Guill Sarah A Guill	1 10

Analysis Report

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Page 1 of 2

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1440892

Reported: 12/27/13 at 12:37 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank <u>LOO</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD <u>%REC</u>	LCS/LCSD <u>Limits</u>	RPD	RPD Max
Batch number: T133511AA	Sample numbe	er(s): 731	3242-7313	245				
cis-1,2-Dichloroethene	< 5	5.	uq/l	92	92	80-120	1	30
trans-1,2-Dichloroethene	< 5	5.	ug/l	102	98	80-120	3	30
Tetrachloroethene	< 5	5.	ug/l	99	97	80-120	2	30
1,1,1-Trichloroethane	< 5	5.	ug/l	96	91	66-126	5	30
Trichloroethene	< 5	5.	ug/l	98	95	80-120	3	30
Vinyl Chloride	< 5	5.	ug/l	83	78	63-120	6	30
Batch number: T133512AA	Sample numbe	er(s): 731	.3246-7313	260				
cis-1,2-Dichloroethene	< 5	5.	ug/l	93		80-120		
trans-1,2-Dichloroethene	< 5	5.	ug/l	100		80-120		
Tetrachloroethene	< 5	5.	ug/l	99		80-120		
1,1,1-Trichloroethane	< 5	5.	ug/l	97		66-126		
Trichloroethene	< 5	5.	ug/l	98		80-120		
Vinyl Chloride	< 5	5.	ug/l	79		63-120		
Batch number: T133541AA	Sample numbe	er(s): 731	.3248					
Trichloroethene	< 5	5.	ug/l	97		80-120		

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD <u>Limits</u>	<u>RPD</u>	RPD <u>MAX</u>	BKG <u>Conc</u>	DUP Conc	DUP <u>RPD</u>	Dup RPD Max
Batch number: T133512AA	Sample	number(s)	: 7313246	-731326	0 UNSP	K: 7313252			
cis-1,2-Dichloroethene	90 (2)	109 (2)	80-141	3	30				
trans-1,2-Dichloroethene	109	110	81-142	1	30				
Tetrachloroethene	107	109	80-128	2	30				
1,1,1-Trichloroethane	109	109	69-140	0	30				
Trichloroethene	-202	-285	88-133	1	30				
	(2)	(2)							
Vinyl Chloride	91	90	66-133	1	30				
Batch number: T133541AA	Sample	number(s)	: 7313248	UNSPK:	P3162	17			
Trichloroethene	129	108	88-133	18	30				

- *- Outside of specification
- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.





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Page 2 of 2

Quality Control Summary

Client Name: Environmental Alliance, Inc. Group Number: 1440892

Reported: 12/27/13 at 12:37 PM

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

	Name: 8260 VOCs mber: T133511AA Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene			
7313242	105	103	98	102			
7313243	106	102	98	102			
7313244	104	103	97	99			
7313245	103	100	96	100			
Blank	102	100	96	98			
LCS	102	101	96	99			
LCSD	101	99	97	98			
Limits:	80-116	77-113	80-113	78-113			
Analysis Name: 8260 VOCs Batch number: T133512AA Dibromofluoromethane 1.2-Dichloroethane-d4 Toluene-d8 4-Bromofluorobenzene							
	Dibromonuoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bi Officiaci operizerie			
7313246	104	100	97	100			
7313247	104	104	97	99			
7313248	103	98	97	102			
7313249	102	102	97	102			
7313250	104	102	97	101			
7313251	105	101	98	101			
7313252	106	101	98	101			
7313253	105	101	98	104			
7313254	104	101	97	103			
7313255	105	103	97	100			
7313256	104	102	97	101			
7313257	105	101	99	101			
7313258	103	101	98	102			
7313259	104	103	98	101			
7313260	103	102	98	98			
Blank	102	102	95	99			
LCS	108	102	98	102			
MS	105	101	98	104			
MSD	104	101	97	103			

78-113

80-113

Limits: 80-116

77-113

^{*-} Outside of specification

⁽¹⁾ The result for one or both determinations was less than five times the LOQ.

⁽²⁾ The unspiked result was more than four times the spike added.

Environmental Analysis Request/Chain of Custody

💸 eurofins

Lancaster Laboratories

Acct. # 703°

For Eurofins Lancaster Laboratories Environmental use only
Group # 140892 Sample # 2313242-66
Instructions on reverse side correspond with circled numbers.

COC# 340855

1) Client Informatio	ľ	(4) Matrix				(5) Analysis Requested								For Lab U	se Only			
Client:	Acct. #:		1	<u> </u>	l							ion C	in the Parliament and the community			FSC:		
ENVIRONMENTAL Alliance Project Name/#:							Agglerovida hadososi	4	periodi accessi di bone pot di acces				rion i Coccione no Coccion tallicon			SCR#:/	148/	75
Surenor Tube #3482	PWSID#:				Ground			1,1								Pres	ervation C	Codes
				Ę	l reg			2								H=HCI		niosulfate
Project Manager: JOR ROSS (P.O. #:	7-5		Sediment	a a		ဖွ	420								N=HNC	o .	
Sampler:	Quote #:	75		o o o			ne	150							l	S =H ₂ S(Remarks	
Ke/Hy				0,	<u>a</u> 83		Containers	127					Ì				Iteman	•
Name of state where samples were collected/		3			Potable NPDES		Ö	36										
PA			Composite		S F		ō	PCE										
2)	Collec	cted	0 <u>d</u>		<u> </u>	i.	*							į				
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AV5	12-11-130		1		1		3	4			 							
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7) Turnaround Time (TAT) Requested (ple	ease circle)	Relind	uished b	1/	- 54	- 6		1-	Date	Time	2	Receive	ed by	n	1/2	. imen/	Date IN 12	Time (9)
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Environmental Analysis Request/Chain of Custody

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Lancaster Laboratories Environmental Acct. # 700 For Eurofins Lancaster Laboratories Environmental use only

Group # 1 4 4 0 8 1 2 Sample # 73 13 2 4 2 - 6 0

Instructions on reverse side correspond with circled numbers.

COC # 341332

1) Client Information	n				(4)	Matrix		1	(5)		An	alysis	Request	ted		For Lab U	Jse Only	
Client:	Acct. #:						ПТ	1					tion Code			FSC:		
Environmental Alliance		######################################			1				田							SCR#:_/	1494	<u> 13C</u>
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MWI MS	<u> </u>	1140	!					3	1									
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FB		1400		-				3	X									
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7) Turnaround Time (TAT) Requested (ple	<u>4——</u> ease circle)		Reling	yished b	by					Date	Tir	me	Received by	<u>_</u> γ y,			Date	Time (9)
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Environmental Sample Administration Receipt Documentation Log 1940892

Client/	Client/Project: Environmental Alliance Shipping Container Sealed: YES NO												
Date of	f Receipt:	12/13/13		Custody	Custody Seal Present * : YES NO								
Time o	f Receipt:	1715		* Custody seal was intact unless otherwise noted in the discrepancy section									
Source	e Code:	01		Package		Chilled	Not Chilled						
Temperature of Shipping Containers													
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (L) Bagged Ice (B) or NA	Comments						
1	DTIZI	0.6	TB	WI	Y	B							
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Address of the Company of the Compan													
Unpacker Signature/Emp#: 2308 Date/Time: 12 13 13 1742													



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meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weightbasis
Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

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Р	Concentration difference between primary and	W	Post digestion spike out of control limits
	confirmation columns >25%	*	Duplicate analysis not within control limits
U	Compound was not detected	+	Correlation coefficient for MSA < 0.995
X,Y,Z	Defined in case narrative		

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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ATTACHMENT II SOIL GAS MONITORING WELL SAMPLING PROCEDURES



Soil Gas Monitoring Well Sampling Procedures

A soil gas sampling event is proposed at the following address:

Lot 8 Superior Tube Company, Inc. 3900 Germantown Pike Collegeville, PA 19426

Following is a summary of the procedures recommended for the sampling event.

Pre-Sampling Inspection

- Soil Gas samples should not be collected less than 24 hours after a heavy rain.
- Personnel collecting the samples will avoid using permanent markers, or wearing perfume or cologne.
- Soil gas monitoring wells (SGMWs) will be gauged with a decontaminated water level indicator to detect for the presence of water in the well and confirm the total depth and well volume.
- Samples will NOT be collected if water is present in the SGMW.
- Note pertinent weather conditions on the field sampling form.

Soil Gas Monitoring Well Sampling Procedure

- Prior to the sampling event, certified 6-Liter Summa Canisters are ordered from the laboratory with the appropriate valves and regulators. In this case, a 2-hour flow controller is proposed for the sampling. Confirm the vacuum pressure on the canister with the lab vacuum pressure, if it is different by more than 10% then don't sample with the container.
- A leak detection test is conducted to verify the integrity of the seal around the SGMW and sample fittings. The test is performed using a tracer gas, helium. The wells are connected to ¼" OD Teflon® (or Teflon® lined polyethylene) tubing. A small bucket or cap is placed over the point and the atmosphere in the immediate vicinity of the point is enriched with the tracer gas. A 1-Liter Tedlar airbag is filled gently by pulling a vacuum on the SGMW and filling the tedlar bag with the extracted gas. The airbag is screened with a portable gas leak detector to monitor for the presence of helium (tracer gas). If necessary, the seal surrounding the SGMW and/or sample fitting is modified and the test repeated.
- Following confirmation of the integrity of the seal, the SGMWs are connected to ¼" OD Teflon®. The tubing is connected to a three-way valve leading to the summa canister and a small portable vacuum pump (peristaltic or hand pump).



- 4) The valve leading to the small vacuum pump (peristaltic or hand pump) is opened and the probe and tubing are carefully purged by slowly filling a dedicated 1-Liter Tedlar airbag for field screening. The airbag is screened using a PID for VOCs and a gas meter for O₂ and CO₂. The purge volume should equal 3 calculated well volumes.
- 5) After the purge is complete, the valve is turned to allow flow into the summa canister, and the pump is disconnected from the line.
- Samples are collected by closing the in-line valve on the pump end of the "T' fitting and opening the valve/regulator to the summa canister. At one SGMW location a duplicate, or replicate, soil gas sample is collected by disconnecting the pump and connecting an additional Summa canister via the "T" fitting.
- 7) An ambient air summa canister sample should be collected at the same time as the soil gas samples.
- 8) To minimize sampling errors, certain actions are avoided during the sampling procedure, such as: fueling vehicles, using permanent marking pens, or wearing perfume that could cause sample interference.
- 9) The Summa canisters are filled at each sample location and submitted to the laboratory for analysis of VOCs via EPA Method TO-15. Additionally, a trip blank consisting of a sealed Summa canister filled with humidified nitrogen accompanies the sample containers from the lab at all times (delivery, sampling, submittal and analysis).

